Ground-penetrating Radar Survey on landslide configuration caused by the 2004 Mid-Niigata Prefecture Earthquake

Takeshi Suenobu[1]; Takao Miyata[2]

[1] Sci.,Kobe Univ; [2] Earth and Planetary, Sci.,Kobe Univ.

After the 2004 Mid-Niigata Prefecture Earthquake (MJMA 6.8), many landslides occurred in mid Niigata prefecture. We surveyed one of them located in Tarusawa district (about 9,600m2 in square) with using a ground-penetrating radar (GPR) prospecting.

The landslide in Tarusawa district consists of Plio-Pleistocene Uonuma Group. Uonuma Group is composed of alternation of conglomerate, sand, silt layers. The size of each layer is a few meters and their dip is about thirty degree from East to West. The landslide is rotational slip and toe of the landslide was transformed to mud flow. It suggests that Tarusawa landslide were effected by the ground water.

The GPR data were obtained from with GPR system SIR-3000(GSSI Co.Ltd). The 100 MHz antenna was used and we survey from top of the landslide to the end of that about seventy-five meters long. Topographic correction, band-pass filter, background removal, migration processing were applied by using the calculatar Radan6.0 (GSSI Co.Ltd).

Judging from processed data, the detected anomaly of the GPR image indicate the subsurface structures such as slip surface, tension clack. Signal attenuation is attributed to the presence of the layer that contains water and the water-bearing soft ground. This result is a good accord with the boring data. The GPR technique is useful for study of landslide configration.